Applicant's response to each of the examiner's rejections:

1. The examiner objects to the drawings because no annotated sheets were filed, and that the new sheets appear to contain new matter.

The applicant respectfully submits, for review by the Official Draftsperson, annotated drawings of relevant portions of the 96 sheets of new drawings, including FIGs. 1-132, which were previously submitted on October 5, 2005.

2. The examiner rejected claims 2-10 and 14-27 under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

Regarding claims 2-10, the examiner asserts that it is unclear how "a determination" in each of these claims is provided.

Regarding claims 14-26, the examiner asserts that it is unclear how the structures therein are controlled by the controller and/or how the signals are processed.

The determination and how the structures are controlled, as claimed, are supported by the specification, including the drawings, as explained under point 7 below.

3. The examiner rejected claims 2-10, 13, 14, 20, 25, and 26 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Regarding claims 2-10, 14, 20, 25, and 26, the examiner asserts that it is unclear what structure these claims add. The structures, as claimed, are supported by the specification, including the drawings, as explained under point 7 below.

Regarding claims 13, the examiner asserts that it is unclear whether this claim includes a baler and/or a tractor, as the examiner notes line 1 and 5-7 of the claim. The Applicants submits that the claim limitation: "field position locator is carried by one of the following" claims that the "field position locator" may be carried by the "agricultural bale accumulator," the "agricultural baler," or the "tractor."

4. The examiner rejected claims 1-15 and 17-30 under 35 USC 103(a) as being unpatentable over the known baler system disclosed by the applicants on page 1, lines 22-31 of their specification or in Lundahl, et al. in view of newly cited Van Eecke, et al. (U.S. Patent No. 4,955,774) or Vellidus, et al. and/or Hale, et al.

The present application teaches on page 1, lines 22-31: "An agricultural baler ("baler") is a widely used piece of mobile equipment which collects and compresses the crop

material as it travels over the ground to produce a compact unit of crop, commonly referred to as a bale. The baler may comprise a motorized machine driven by an operator or, alternatively, may comprise a wheeled frame adapted for traveling alongside or behind a tractor. Typically, a baler is a wheeled chassis adapted for hitched connection to a tractor to be towed in tandem behind the tractor. After the baler forms a bale, a cord, such as wire or twine, is tied around the bale to hold the bale together in its compressed form. The baler ejects the tied bales periodically from a bale chamber of a baler as the baler travels over the ground. Each ejected bale may be directly discharged either to a bale accumulator or to the ground for later pick up by a bale collector in order to make the harvesting of the crop material more efficient and to decrease manual labor. Bales provided by either the bale accumulator or the bale collector may then be deposited on a vehicle, such as a tractor trailer, for hauling to another location for storage." (herein referred to as the "Applicant's disclosed baler")

Lundahl, et al teaches: "A hay baler including a trailer frame with a hitch for attachment to a prime mover and support wheels. A crop pick-up unit moves cut crop into a material storage area, from where it is moved into a bale chamber and is compacted by a compression unit and tied with twine before being discharged to ground from the rear of the trailer frame." (Abstract)

Van Eecke, et al. teaches: "Agricultural balers are in common use and operate to pick-up and compress crop material, such as hay, straw, etc., into bales and wrap completed bales with wire or twine. Wrapped bales are ejected periodically from the bale chamber of a baler as the latter travels over the field and each bale, on being ejected, normally is discharged directly to the ground.

In order to make the overall baling and bale hauling operation more efficient, it has already been proposed to provide a bale accumulator which is arranged to receive successive bales as they are discharged from a baler and to accumulate the bales into a group or parcel and then discharge the parcel to the ground." (col. 1, lines 23-34)

Vellidus, et al. teaches: "a crop yield monitoring system and method which can be used during harvesting of a crop, such as peanuts, pecans, Vidalia onions, and others, which are transported into a collection basket in order that crop yield can be determined based on measuring mass changes of the collection basket. The invention provides crop yield mapping data for evaluating crop yield at locations in a site-specific farming area." (col. 4, lines 16-23) "The peanut pods are removed from the plant vines." (col. 5, line 27) An air delivery

system conveys the peanut pods to the storage or collection basket 40 disposed on the top of the combine. (col. 5, lines 42-44)

Vellidus, et al. includes only one reference to a "baler" in col. 1, lines 42-45, which does not relate to controlling the baler based on its location in a field, and which describes signal noise remaining a severe limitation to forage yield monitoring.

Hale, et al. teaches "a field mapping system for an agricultural vehicle, such as a combine, planter or cultivator."

In summary of the cited references, Van Eecke, et al. and the Applicant's disclosure each teach a baler and a bale accumulator. Lundahl, et al teaches "a hay baler." Hale, et al. teaches "a field mapping system for an agricultural vehicle, such as a combine, planter or cultivator." Vellidus, et al. teaches "a crop yield monitoring system and method which can be used during harvesting of a crop, such as peanuts, pecans, Vidalia onions ..." using a combine.

Independent claims 1 and 26 each claim, for example, at least the following limitations: "a controller adapted to control an operation of the agricultural bale accumulator responsive to receiving a location signal representative of a location of the agricultural bale accumulator in an agricultural field."

The teachings Van Eecke, et al. or Hale, et al. and/or Vellidus, et al. in combination with the teaching of the Applicant's disclosed baler or Lundahl, et al is not the same as and/or does not render obvious the claimed "a controller adapted to control an operation of the agricultural bale accumulator responsive to receiving a location signal representative of a location of the agricultural bale accumulator in an agricultural field," for at least the following reasons.

There is no basis in one or more of the four cited references for modifying one or more of the four cited references to meet the claimed limitation of "a controller adapted to control an operation of the agricultural bale accumulator responsive to receiving a location signal representative of a location of the agricultural bale accumulator in an agricultural field."

Neither Hale, et al. nor Vellidus, et al. teaches or suggests the claimed "agricultural bales of crop material." Therefore, Hale, et al. or Vellidus, et al. is not properly modifiable by either the Applicant's disclosed baler or Lundahl, et al teaching of "a hay bale" when its intended function is destroyed because of the difference in the crop material among the cited references.

Neither Hale, et al. nor Vellidus, et al. teaches or suggests the claimed "an agricultural bale accumulator adapted to receive agricultural bales of crop material." Therefore, Hale, et al. or Vellidus, et al. is not properly modifiable by either the Applicant's disclosed baler or Lundahl, et al teaching of "a hay baler for producing hay bales" when its intended function is destroyed because of the difference in transporting the crop material among the cited references.

Neither Hale, et al. nor Vellidus, et al. teaches or suggests the claimed: "crop material formed by and ejected from an agricultural baler." Therefore, Hale, et al. or Vellidus, et al. is not properly modifiable by either the Applicant's disclosed baler or Lundahl, et al teaching of "a hay baler for producing hay bales" when its intended function is destroyed because of the difference in machinery forming and handling the crop material.

Nowhere does Hale, et al., Vellidus, et al., the Applicant's disclosed baler or Lundahl, et al, either alone or in combination, teach or suggest the use of site-specific farming (e.g., GPS) in combination with "an agricultural bale accumulator" and "agricultural bales of crop material," as claimed. There is no basis in one or more of the cited references for combining the teachings of the cited references or modifying the four cited references to meet the claimed limitations.

Nowhere does Hale, et al., Vellidus, et al., the Applicant's disclosed baler or Lundahl, et al, either alone or in combination, teach or suggest the problems or the problems' source, associated with the claimed "agricultural bale accumulator" and "agricultural bales of crop material." Therefore, teachings of the cited references, either alone or in combination, cannot provide a solution to the problems associated with the claimed "agricultural bale accumulator."

The cited references, in combination, teach away from the claimed limitations of the "control an operation of the agricultural bale accumulator responsive to receiving a location signal" because Hale, et al. and Vellidus, et al. each teach a different machine, a different way to control the machine, a different crop material, a different way to harvest the different crop material, and a different way to transport the different crop material.

In addressing the Examiner's particular assertions, Van Eecke, et al. and the Applicant's disclosure each teach a baler and a bale accumulator, and Lundahl, et al teaches "a hay baler." However, Lundahl, et al does not teach or suggest a bale accumulator, as the Examiner suggests.

The Examiner suggest that Lundahl, et al and Vellidus, et al. disclose automated systems, but these automated systems do not teach or suggest the claimed limitation "a

controller adapted to control an operation of the agricultural bale accumulator responsive to receiving a location signal representative of a location of the agricultural bale accumulator in an agricultural field," as the Examiner suggests. Neither Lundahl, et al or Vellidus, et al. teach or suggest a bale accumulator.

The Examiner asserts that substituting Van Eecke, et al. bale accumulator in the Applicant's disclosed conventional baler system or Lundahl, et al would be obvious. As the Applicant mentioned above, Van Eecke, et al. bale accumulator for the Applicant's disclosed conventional baler system, which already includes a conventional bale accumulator, yields nothing new. Lundahl, et al only discloses a hay baler, and the Examiner does not make it clear what the Van Eecke, et al. bale accumulator is being substituted for in Lundahl, et al. In any case, Van Eecke, et al. and the Applicant's disclosure each teach a conventional baler and a conventional bale accumulator, and Lundahl, et al teaches a conventional hay baler. However, this combination does not meet the claimed limitation "a controller adapted to control an operation of the agricultural bale accumulator responsive to receiving a location signal representative of a location of the agricultural bale accumulator in an agricultural field."

The Examiner's assertion that it would be obvious to replace the controls of Van Eecke, et al. and the Applicant's disclosure each teaching of a conventional baler and a conventional bale accumulator, or Lundahl, et al teaching of a conventional hay baler in combination with Vellidus, et al. teaching of a crop yield monitoring system for a combine or Hale et al teaching of a field mapping system for a combine, planter or cultivator does not appear to be a proper combination. The Examiner's proposed combination suggests more than merely replacing manual mean with mechanical means or automatic means to accomplish the same result for at least the following reasons:

1) There is no teaching or suggestion in Van Eecke, et al., the Applicant's conventional disclosure, or Lundahl, et al to "control an operation of the agricultural bale accumulator responsive to receiving a location signal," as claimed. Therefore, the Examiner's assertion of the combination of references rendering the claimed invention obvious appears to lack the requirements of a proper obviousness rejection.

2) There is no teaching or suggestion in either Vellidus, et al. or Hale et al to "control an operation of the agricultural bale accumulator responsive to receiving a location signal" as claimed. Therefore, the Examiner's assertion of the combination of references rendering the claimed invention obvious appears to lack the requirements of a proper obviousness rejection.

3) Hale, et al. and Vellidus, et al. each teach a different machine, a different way to control the machine, a different crop material, a different way to harvest the different crop material, and a different way to transport the different crop material than what is disclosed in Van Eecke, et al., the Applicant's conventional disclosure, and/or Lundahl, et al. Therefore, the Examiner's assertion of accomplishing the same result does not appear to be physically possible.

The Examiner's assertion that "the claims do not preclude the pick up" is not clear to the Applicant. If the Examiner is referring to a "pick up" mechanism by a combine, such as might be used by Hale, et al., such "pick up" does not teach or suggest the claim limitation "a load bed adapted to receive, along a bale receiving axis, agricultural bales of crop material formed by and ejected from an agricultural baler, and adapted to accumulate the agricultural bales on the load bed," as claimed.

The Examiner's general assertion that Vellidus, et al. can be combined with any standard farm equipment to render the present invention obvious appears to be overly broad and without support considering the three arguments identified, as 1-3 above.

The Examiner's assertion that Hale, et al. combine contains "accumulators" of some sort may be true, but Hale, et al. does not teach or suggest the claim limitation "a load bed adapted to receive, along a bale receiving axis, agricultural bales of crop material formed by and ejected from an agricultural baler, and adapted to accumulate the agricultural bales on the load bed," as claimed. In other words, the Examiner's interpretation of some sort of "accumulator" in the combine is not the same as the claimed bale accumulator because combines do not "receive, along a bale receiving axis, agricultural bales of crop material formed by and ejected from an agricultural baler."

For at least these reasons, the cited references, either alone or in combination, require more than replacing manual means with mechanical or automatic means to accomplish the same results, as achieved by the present independent claims 1 and 26, for example.

Further, dependent claims 2-25 and dependent claims 27-35 include additional limitations that further define the present invention to further distinguish over the cited references.

For at least these reasons, the present independent claims 1 and 26 are patentable over the four cited references, either alone or in combination. Therefore, the applicant respectfully request that the examiner's rejection of claims 1-15 and 17-30, under 35 USC 103(a) as being unpatentable over the Applicant's disclosed baler, or newly cited Lundahl, et al in view of Van Eecke, et al. or Vellidus, et al. and/or Hale, et al., be withdrawn.

Notwithstanding the above response, the Applicant has amended claims 1 and 26 to more clearly claim "responsive to receiving a location signal representative of a determined location of the agricultural bale accumulator in an agricultural field." For, example, the determined location may be determined by a GPS receiver and sent to the controller for the bale accumulator. Such a "determined location" further distinguishes over Applicant's conventional disclosed baler, Lundahl, et al, or Van Eecke, et al, which appear to control the accumulator or baler without regard to "a determined location of the agricultural bale accumulator in an agricultural field." Further, Vellidus, et al. and/or Hale, et al. also do not appear to operate in response to "a determined location of the agricultural bale accumulator in an agricultural field." Claim 6 is also amended to correct a typographical error. Therefore, the Applicant respectfully submits that the present amendment further distinguishes the present claims from the combination of the cited references.

5. The examiner objected to claims 31-35 for being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The applicant appreciates the examiner's indication of allowable claims. The applicant respectfully submits that adding the "bale accumulator" limitation from intervening claim 13 and adding the "baler" limitation from intervening claim 12 to claim 1, and adding the same limitations to claim 26 overcomes the examiner's present rejections.

6. The applicant respectfully submits that claims 1-35 describe an improved agricultural bale accumulator advantageously providing increased bale accumulating capacity, and/or intelligent bale accumulation and bale discharge operations to permit efficient, flexible, and desirable harvesting of hay and forage crop material. The features of the claimed agricultural bale accumulator and/or its associated advantages are not taught or suggested by the references of record, either alone or in combination.

7. The following description responds to the Examiner's points under points 2 and 3 above.

A. Bale Stacking Module

1. Concept:

The bale-stacking module has a bale stacking mechanism stacks bales on top of each other.

2. Figures:

FIGs. 43-73, including FIG. 43 showing a method used with FIGs. 44-73, 44-61 showing a single load bed design and FIGs. 62-73 showing a multiple load bed design.

FIGs. 44-51 show the single load bed bale, raising design, wherein FIG. 44 shows a general method for raising a bale first to create a stack of bales, FIG. 45 shows a sequence of accumulating steps for creating a stack of bales by raising the first bale followed by transferring the stack of bale across the load bed, FIG. 46 shows a sequence of accumulating steps for transferring a bale followed by creating a stack of bales on the load bed, FIGs. 47-49 show a moveable bale raising mechanism that retracts below the load bed, and FIGs. 50 and 51 show a fixed frame bale raising mechanism that is fixed above the load bed.

FIGs. 52-61 show the single load bed, bale lowering design, wherein FIG. 52 shows a method for lowering a bale first to create a stack of bales, FIG. 53 shows a sequence of accumulating steps for creating a stack of bales by lowing the bale first followed by transferring the stack of bale across the load bed, and FIG. 54-58 show a moveable bale lowering mechanism that lowers a center bale receiving portion of the load bed.

FIGs. 59-61 show the single load bed, bale raising and lowering combination design, wherein FIG. 59 shows a method for using a combination of raising and lowering bales to create a stack of bales, FIG. 60 shows a sequence of accumulating steps for creating the stack of bales by raising a first bale then lowering a second bale to create a stack of bales followed by transferring the stack of bale across the load bed, and FIG. 61 shows a sequence of accumulating steps for creating a stack of bales by lowering the first bale then raising the second bale to create the stack of bales followed by transferring the stack of bale across the load bed.

FIGs. 62-73 show a multiple load bed design, wherein FIG. 62 shows a general method for creating a stack of bales using multiple load beds.

FIG. 63 shows a method for creating a stack of bales using multiple moveable load beds, and FIG. 64 shows a sequence of bale accumulating steps by filling one load bed first followed by raising the load bed.

FIGs. 65 and 66 show a bale stacking mechanism using multiple, moveable stacked load beds.

FIGs. 67 and 68 show a bale stacking mechanism using multiple, moveable nested load beds.

FIG. 69 shows a method for creating a stack of bales using multiple, fixed load beds. FIG. 70 shows a sequence of accumulating steps for creating a stack of bales using multiple fixed load beds. FIG. 71-73 show a bale stacking mechanism using multiple fixed load beds.

3. Features:

The figures describe various alternative methods, bale accumulating sequences and mechanisms for creating a stack of bales on an accumulator. One alternative distinction is whether one or more load beds are used to create the stack of bales.

When one load bed is used, then another alternative distinction is whether the bales are first raised or lowered to create the stack of bales. When one load bed is used and when the bales are first raised, then another alternative distinction is whether the bale raising mechanism is retractable below the load bed or a fixed frame above the load bed. Further, when one load bed is used, then a combination of raising and lowering the bales may be used to create the stack of bales by their associated mechanisms.

When multiple load beds are used, then another alternative distinction is whether moveable or fixed, multiple load beds are used to create the stack of bales. When moveable, multiple load beds are used, then another alternative distinction is whether the moveable, multiple load beds are stacked or nested.

4. Benefits:

a) Increased bale accumulating capacity: The bale-stacking module increases the bale accumulating capacity of the accumulator by permitting:

1) multiple bales to be accumulated next to each other on multiple load beds, and/or

2) multiple bales to be accumulated on top of each other on one or more load beds.

b) Reduced accumulator cost per bale accumulating capacity: Assuming that the stacking module cost a fraction of the cost of the entire accumulator without the stacking module, and assuming that the staking module would at least double the present bale accumulating capacity of the accumulator, then the accumulator cost per bale accumulating capacity is substantially reduced. For example, assuming that the stacking module adds 10% more to the price of the entire accumulator without the stacking module (e.g., \$1.0X), and that the staking module doubles the present bale accumulating capacity of the accumulator from three to six bales, then the accumulator cost per bale accumulating capacity is reduced by 45% from \$0.33X/bale (\$1.0X/3 bales) to \$0.18X/bale ((1.0X + 0.10X)/6 bales). Further, when the staking module triples the present bale accumulating capacity of the accumulator from three to nine bales, then the accumulator cost per bale accumulating capacity is reduced by 63% from \$0.33X/bale (\$1.0X/3 bales) to \$0.12X/bale ((1.0X + 0.10X)/9 bales).

c) Increased bale handling efficiency: Operators typically transfer the accumulated bales, that are discharged to the ground, from the ground to a flat bed truck where they are stacked two or three bales high for efficient hauling. The bale-stacking module provides bales already stacked and ready to be transferred directly to the flat bed truck, thus eliminating the time needed to create stacks of bales using a loading machine prior to or during the loading of the bales on the flat bed truck. Further, more bales that are discharged in one place on the ground requires less traveling across the field by the loading machine and/or the flat bed truck to retrieve the bales.

5. Conclusion:

Hence, the bale stacking module has a bale stacking mechanism for increasing the bale accumulating capacity of the accumulator by creating stacks of accumulated bales to reduce the accumulator cost per bale accumulating capacity and to increase the bale handling efficiency.

B. Bale Advancement Module

1. Concept:

The bale advancement module advances a fully formed bale onto the accumulator ahead of a successive bale still being formed in a bale shoot of a baler to create a gap between the two bales to permit the fully formed bale to be handled by the accumulator in an amount of time less than the time the time that the successive bale travels across the gap.

2. Figures:

FIGs. 74-80, wherein FIG. 74 shows a method for the bale advancement module, 75-77 shows a first bale advancement mechanism as a partially spiked cylinder, and, alternatively, FIGs. 78-80 shows a second bale advancement mechanism as a partially spiked conveyor belt.

3. Features:

Preferably, the bale advancement module has a bale position sensor and a bale advancement mechanism positioned on the bale-receiving portion of the load bed on the accumulator. When the sensor determines that a first bale being received is fully formed but still exiting the end of the bale shoot of the baler, the bale advancement mechanism, such as the partially spiked cylinder or the partially spiked conveyor belt, pulls the bale onto the bale receiving portion of the load bed ahead of the second, next successive bale still being formed. The pulling ahead of the first bale ahead of the second bale creates a gap between the two bales. The second bale takes a minimum amount of time to travel the gap before it reaches the bale-receiving portion of the load bed. During the minimum amount of time, the first bale or other bales accumulated on the load be are handled before the second bale reaches the bale receiving portion of the load bed. The bale handling operations include bale stacking, as described above, and/or center bale discharging, as described below.

For example, during a bale stacking operation, the bale-stacking module preferably needs time to lower a raised bale onto the last received bale and transfer the stack of bales, without the next successive bale pushing the last received bale and therefore the entire stack of bales out of alignment.

Also, for example, during a center bale discharging operation, the center bale discharging module needs time to pivot the load bed to its bale discharging position and then back to its bale receiving position before the next successive bale reaches the front end of bale receiving portion of the load bed.

4. Benefits:

Creates a time delay: The bale advancement module creates a time delay to permit bale handling, such as bale stacking and/or center bale discharging, of the bales received on the bale receiving portion of the load bed, without interference from the next successive bale to be received on the bale receiving portion of the load bed by creating a gap between the two successively received bales.

5. Conclusion:

Hence, the bale advancement module has a bale sensor and a bale advancement mechanism to create a time delay by creating a gap between successive bales to permit the accumulator to have time to handle bales received on the bale receiving portion of the load bed, without interference from the next successive bale to be received on the bale receiving portion of the load bed.

C. Bale Arrangement Control Module

1. Concept:

The bale arrangement control module permits dynamic variation of the arrangement of the bales accumulated on the accumulator within the total bale accumulating capacity of the bale accumulator.

2. Figures:

FIGs. 81-83, wherein FIG. 81 shows a method for dynamically varying the arrangement of bales, FIG. 82 shows an accumulator with a total bale accumulating capacity of twenty-one bales, and FIG. 83 shows a table presenting various bale arrangements.

3. Features:

The bale arrangement control module includes a control circuit for controlling bale moving mechanism, such as the bale-stacking module, the bale transferring module and bale discharging module, on the accumulator for dynamically arranging the bales on the accumulator based on a static or dynamic input condition. The static input condition may be responsive to an operator input, the design of the accumulator, the bale arrangement on a flat bed truck, the bale arrangement at a storage facility, etc. The dynamic input condition may be responsive to the position of the extension tables, a measure of the levelness of the load bed, the weight of the bales, the size of the bales, the location of the accumulator in the field, etc. The dynamic arrangement ranges from accumulating one bale on the accumulator to the maximum bale accumulating capacity of the accumulator.

4. Benefits:

a) Increased flexibility: The bale arrangement control module provides the flexibility to arrange the bales on the accumulator based on the static or dynamic conditions, as described above.

b) Increased productivity: The bale arrangement control module provides a preferred arrangement of bales on the accumulator based on the static or dynamic conditions, as described above, to increase productivity.

c) Increased intelligence: The bale arrangement control module provides dynamic control over the arrangement of bales on the accumulator based on the static or dynamic conditions, as described above, to increase the intelligence of the accumulator.

5. Conclusion:

Hence, the bale arrangement control module permits dynamic variation of the arrangement of the bales accumulated on the accumulator within the total bale accumulating capacity of the bale accumulator to increase the flexibility, productivity and intelligence of the accumulator.

D. Bale Stabilization Module

1. Concept:

The bale stabilization module stabilizes the accumulated bales on the accumulator or as the accumulated bales are discharged from the accumulator.

2. Figures:

FIGs. 84-103, wherein FIG. 84 shows a method for stabilizing bales accumulated on the load bed of the accumulator, FIGs. 85-91 show a load bed leveling mechanism, and FIGs. 92-103 show a lateral bale stabilization mechanism.

3. Features:

FIGs. 85-91 show a leveling module for leveling the load bed of the accumulator along one or both of the lateral and longitudinal axis of the accumulator. The leveling module generally includes a controller, a level sensor, and lateral and longitudinal leveling mechanisms. The level sensor determines the levelness of the load bed. The lateral and longitudinal leveling mechanisms physically level the load bed. The controller controls the lateral and longitudinal leveling mechanisms based on the reading from the level sensor.

FIGs. 92-103 show a lateral bale stabilization module for stabilizing accumulated bales along the lateral axis of the accumulator. The lateral bale stabilization module generally includes a controller, bale position sensors, extension tables and extension table movement mechanism. The bale position sensors sense the position of the bales on the load bed and extension tables. The extension tables extend the bale accumulating capacity, as described above. The extension table movement mechanism moves the extension tables from a horizontal position to a vertical position. The controller monitors the position of the bales. The extension table movement mechanism moves an extension table from a vertical position to a horizontal position just before the bale is ready to be transferred onto the extension table responsive to the monitored bale position. The extension tables may be angled somewhat above the horizontal position to bias the bale on the extension table towards the center of the accumulator. The extension table movement mechanism may be implemented with a counterweight mechanism to cause the extension table to move from the vertical position to the horizontal position using the weight of a bale positioned next to the extension table.

4. Benefits:

a) The bale stabilization module including each of the leveling module and the lateral bale stabilization module:

1) Maintains bale positioning: The leveling module encourages the bales to remain on the accumulator when the accumulator is traveling across rough or unleveled ground.

2) Maintains stacked bale formations: The leveling module encourages bales to remain stacked on each other on the accumulator when the accumulator is traveling across rough or unleveled ground.

5. Conclusion:

The bale stabilization module stabilizes the accumulated bales to maintain their single level or stacked formation as the accumulator travels across rough or unleveled ground.

E. Center bale Discharge Module

1. Concept:

The center bale discharge module permits the accumulator to discharge a bale accumulated on a center bale receiving part of the load bed without interfering with the next bale to be received on the load bed.

2. Figures:

FIGs. 74-80 and 104-111, including FIG. 104 shows a method used with one of five notch designs shown in FIGs. 105-111, or with the bale advancement design shown in FIGs. 74-80.

3. Features:

The center bale discharge module creates a gap between the front edge of the center of the load bed and the bale being formed in the bale shoot of the baler. As described with the bale advancement module, the bale being formed needs a minimum amount of time to travel through the gap as the baler forms the second bale and pushes the bale towards the load bed. The gap is formed by either the bale advancement module, as described above or by forming a notch in the center portion of the load bed. The creation of the gap creates time for the center bale to be discharged by pivoting the load bed up and down, without the load bed interfering with the next bale to be received on the load bed.

FIGs. 74-80 show the center bale discharge module implemented with the bale advancement module.

FIGs. 105-111 show the center bale discharge module implemented with a notch in the front of the center part of the load bed. FIGs. 105-109 show a hinged, sliding or rotating support member in the notch. FIGs. 107 and 110-111 show a sloped or pivoting load bed.

4. Benefits:

a) Increase bale accumulating and discharging capacity: The center bale discharge module permits the accumulator to discharge a bale accumulated on a center bale receiving part of the load bed, thereby increasing bale accumulating and discharging capacity.

b) Tighter bale grouping: The center bale discharge module permits the discharged bales to be grouped next to each other on the ground which stabilizes the bales during the discharge and results in fewer trips across the field for loading onto a flat bed trailer.

5. Conclusion:

The center bale discharge module permits the accumulator to discharge a bale accumulated on a center bale receiving part of the load bed without interfering with the next bale to be received on the load bed.

F. Selective Bale Discharge Control Module

1. Concept:

The selective bale discharge control module permits the accumulator to selectively control the discharge of bales accumulated on the center table of the load bed and/or bales a accumulated on the side tables of the load bed that are adjacent to the center table.

2. Figures:

FIGs. 112-119, wherein FIG. 112 showing a method used by the design shown in FIGs. 113-119, FIG. 112 shows a method for selectively control the discharge of bales accumulated on the center and/or side tables of the load bed, and FIGs. 113-119 show a selective bale discharge control mechanism.

3. Features:

The method in FIG. 112 provides the intelligence for the accumulator in the form of a controller that determines whether to discharge only the center bale, only the side bales or both the center and the side bales. Preferably, the selective bale discharge control mechanism generally includes a latch mechanism and table pivoting mechanism. The latch mechanism selectively latches the center table to the side tables responsive to the instructions from the controller. The table pivoting mechanism causes the center table and/or the side tables to pivot to discharge the bales positioned thereon.

4. Benefits:

a) Increased bale discharge control: The selective bale discharge control module permits the accumulator to selectively control the discharge of accumulated bales, thereby increasing control over bale discharging and consequently increasing bale handling efficiency. For example, if the accumulator is at an end of the field where the flat bed truck is being loaded, but the center bale is still being formed, then the side tables discharge the accumulated bales. Further, if the accumulator is near an end of the field where the flat bed truck is being loaded, and the center bale is formed but not yet transferred across the table, then the center table and the side tables discharge the accumulated bales.

b) Increased intelligence: The selective bale discharge control module permits the accumulator to selectively control the discharge of accumulated bales, responsive to various conditions without operator involvement, if desired.

5. Conclusion:

The selective bale discharge control module permits the accumulator to selectively control the discharge of bales accumulated on the center table and/or the side tables to intelligently control bale discharge.

G. Bale Speed Discharge Control Module

1. Concept:

The bale speed discharge control module controls a discharge speed of the bales accumulated on the load bed of the accumulator to the ground based on the speed that the accumulator is traveling across the ground.

2. Figures:

FIGs. 120-124, wherein FIG. 120 shows a flowchart used by the mechanism shown in FIGs. 121-124.

3. Features:

The bale speed discharge control module preferably includes an accumulator speed senor, a bale engagement mechanism and a bale speed controller. The accumulator speed senor senses the speed of the accumulator and may be implemented as the speedometer on the tractor. The bale engagement mechanism is preferably implemented as a cylinder having spikes positioned at the rear end of the accumulator. The spikes are permitted to protrude into the accumulated bales as the load bed tilts to discharge the accumulated bales. The bale speed controller controls the bale engagement mechanism to discharge the bales as the load bed tilts responsive to the sensed speed of the accumulator.

4. Benefits:

a) Neat and orderly arrangement of discharged bales: The bale speed discharge control module provides a regulated discharge of the accumulated bales resulting in a neat and orderly arrangement of discharged bales on the ground. The bale speed discharge control module is particularly useful when the bale stacking module is used to prevent the stacks of accumulated bales from sliding off the load bed too fast thereby causing the upper bales in the stack to skip or bounce forward over the lower bales in the stack, thereby resulting in a disordered array of bales on the ground.

b) Prevent damage to discharged bales: The bale speed discharge control module provides a regulated discharge of the accumulated bales to prevent damage to the discharged bales, such as breaking twine, twisted bales, etc.

5. Conclusion:

The bale speed discharge control module controls a discharge speed of the bales accumulated on the load bed of the accumulator to the ground based on the speed that the accumulator is traveling across the ground to provide an orderly arrangement of discharged bales on the ground and to prevent damage to the discharged bales.

H. Field Location Control Module

1. Concept:

The field location control module controls the bale accumulation operation and/or bale discharge operation of the accumulator based on the location of the accumulator in the field.

2. Figures:

FIGs. 125-127, including FIGs. 125 and 126 showing general and specific methods, respectively, used by the accumulator schematic shown in FIG. 128 in the field shown in FIG. 127.

3. Features:

The field location control module preferably includes a global positioning satellite (GPS) receiver and a controller. The GPS receiver determines the location of the accumulator in the field. The controller controls the operation of the accumulator, such as accumulating and discharging bales. The field location control module accumulates and discharges the accumulated bales responsive to the location of the accumulator in the field. Generally, the controller factors in the location of the accumulator relative to dump zones in the field, the bale accumulating capacity of the accumulator, the rate of bale accumulation on the accumulator, etc. to cause the accumulator to automatically discharge the optimal number and arrangement of accumulated bales in the dump zones.

4. Benefits:

a) Increased bale accumulation discharge control: The field location control module increases the control of the bale accumulation operation and/or bale discharge operation of the accumulator based on the location of the accumulator in the field.

b) Increased intelligence: The field location control module permits the accumulator to automatically control the accumulation and discharge of the bales on the location of the accumulator in the field.

5. Conclusion:

The field location control module controls the bale accumulation operation and/or bale discharge operation of the accumulator based on the location of the accumulator in the field.

I. Combination Of Modules

1. Concept:

The modules describe above are designed with a modular build approach in mind so that any appropriate combination of modules may be attached to a universal accumulator platform.

2. Figures:

FIGs. 128-132, wherein FIG. 128 shows a schematic diagram of the accumulator, and FIGs. 129-132 show an accumulator having a particular combination of modules.

3. Features:

The features of the accumulator having the combination of modules are as numerous as the modules described above and all of the possible combinations of modules.

4. Benefits:

Flexibility: The modules adapted for use with the universal accumulator platform may be responsive to such considerations as: a customer's initial order request, a customer's post sale upgrade, a manufacturer's or distributor's pricing strategy, a manufacturer's or distributor's distribution strategy, etc.

5. Conclusion:

A universal accumulator platform adapted to receive a combination of modules provides the customer, the manufacturer, the distributor, etc. with the flexibility to create any number of preferred accumulator designs, if desired.

8. The applicant respectfully submits that no new matter has been added to the claims or in the drawings.

9. In view of the foregoing, Applicant submits that all pending claims are in condition for allowance. Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the phone number provided below.

10. The applicants submit herewith a petition under 37 CFR 1.136 for a three month extension of time with an associated fee. This request and amendment is filed on September 28, 2006, under the Certificate of Mailing pursuant to 37 CFR 1.18, within the three month shortened statutory period set for reply in the Final rejection dated March 28, 2006 plus a three month extension of time under 37 CFR 1.136(a), which expires September 28, 2006, pursuant to MPEP 710.01(a).

11. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
Phillip G. Spaniol et al.

Dated: Sept 28, 2006

By: Kevin D. Kaschke

Kevin D. Kaschke
Applicant/Inventor
Registration No. 35,767
Phone: (630) 377-6759
Fax: (630) 377-6795

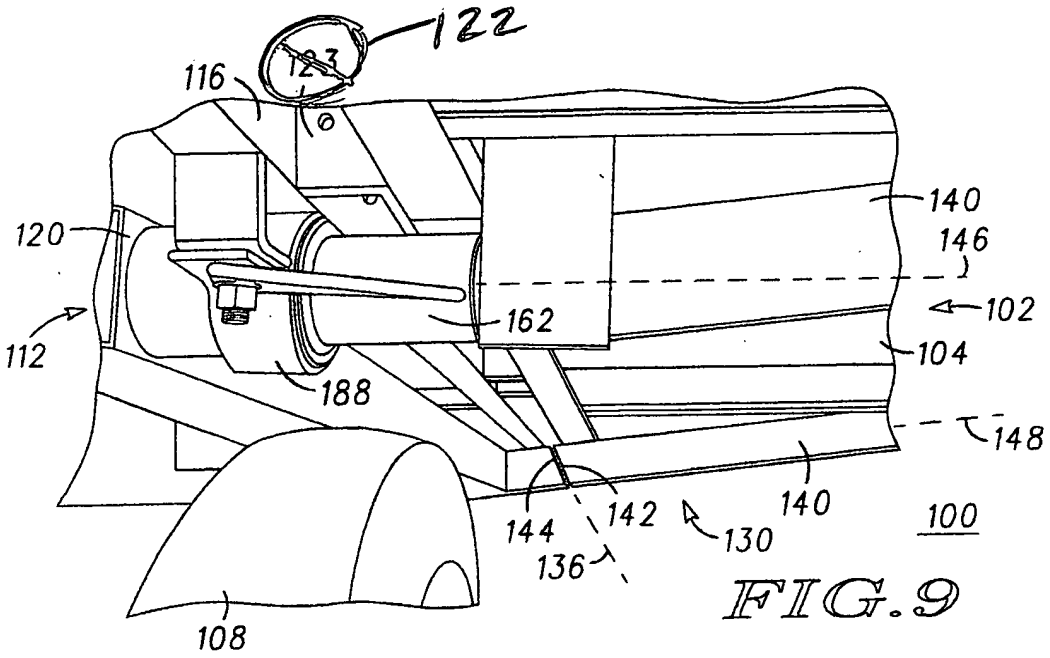

FIG. 9

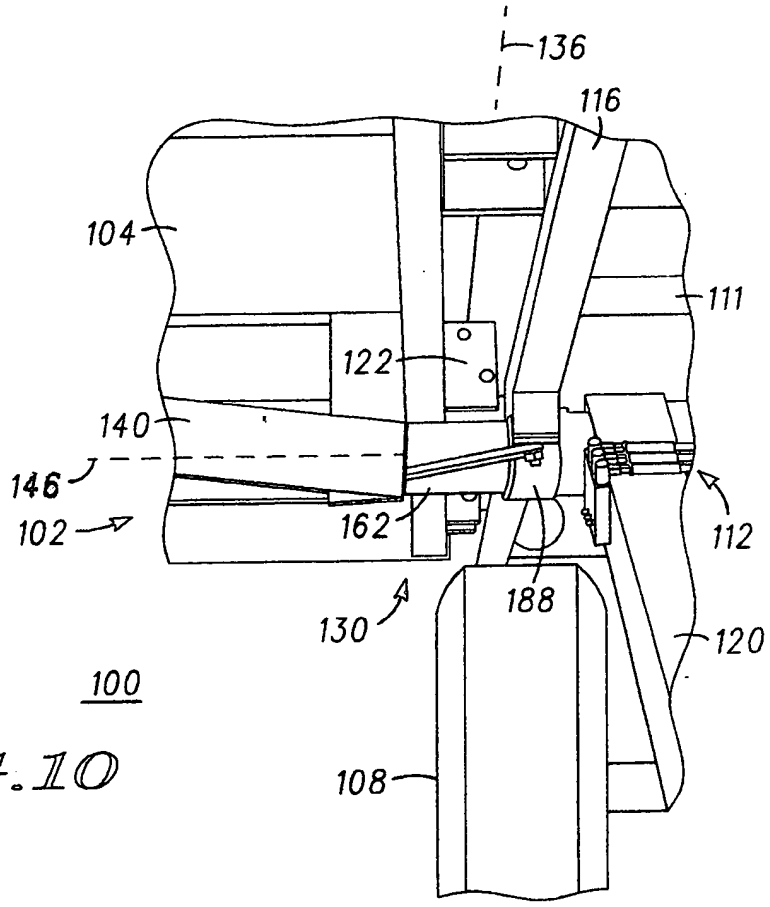

FIG. 10

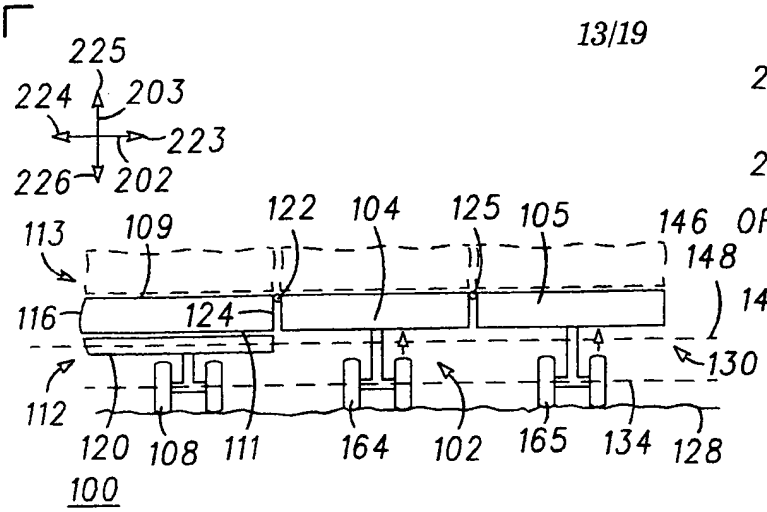

FIG.24

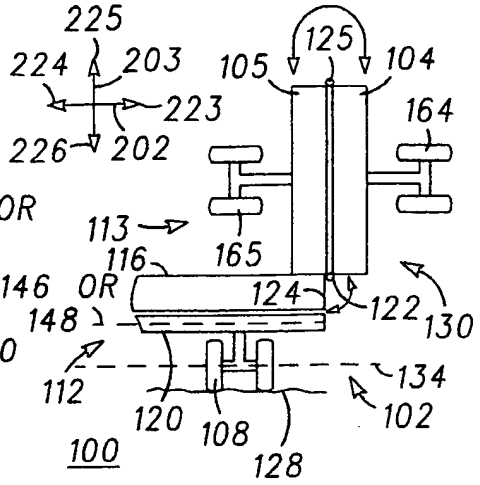

FIG.25

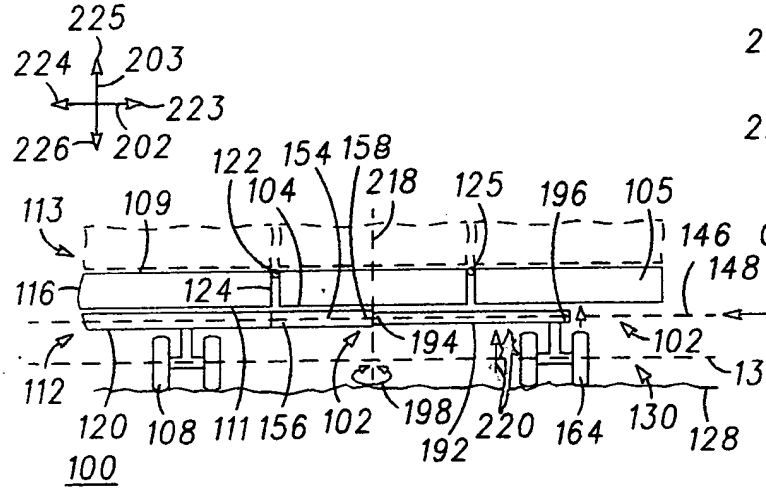

FIG.26

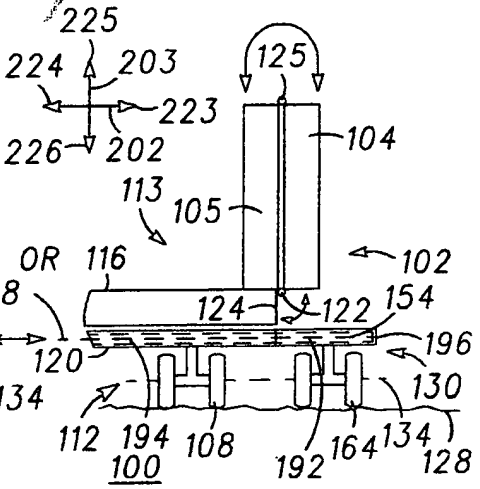

FIG.27

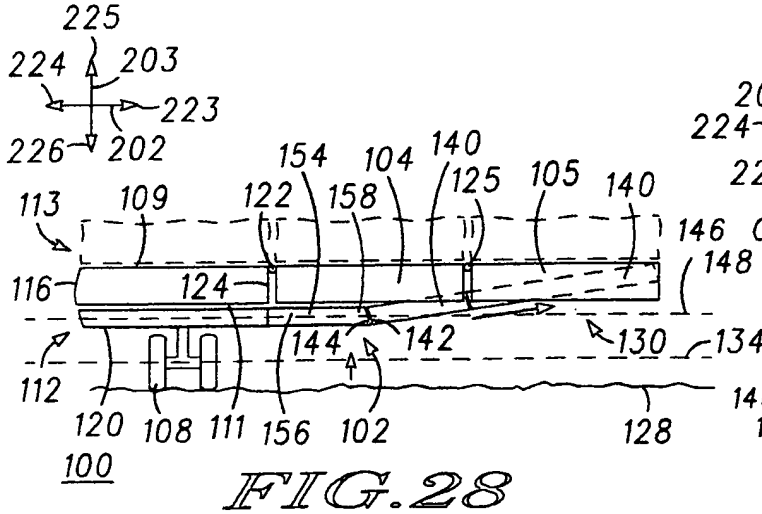

FIG.28

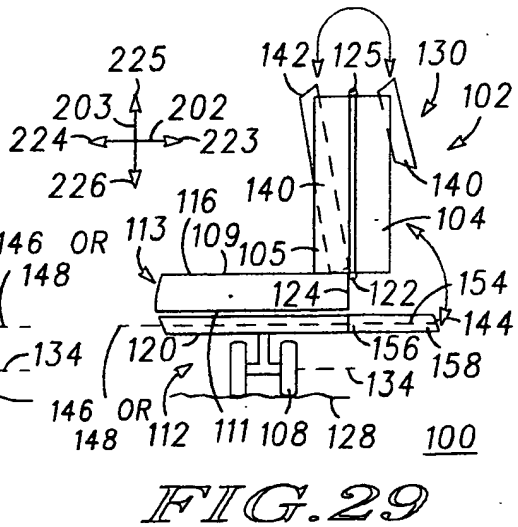

FIG.29

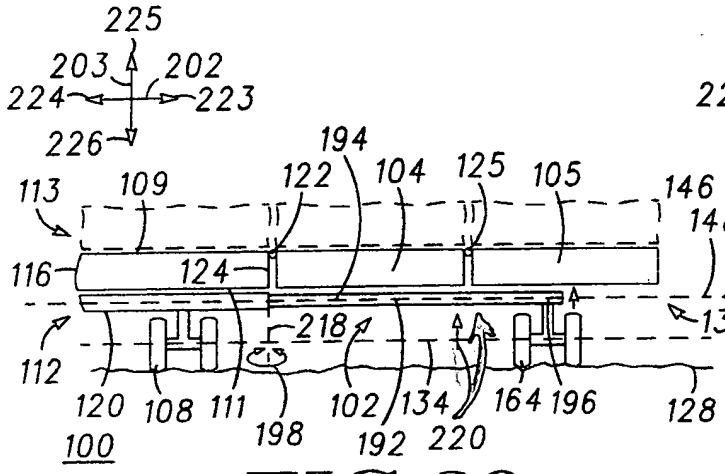

FIG.30

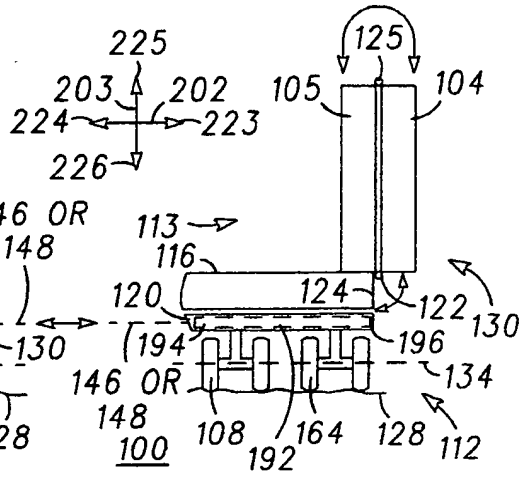

FIG.31

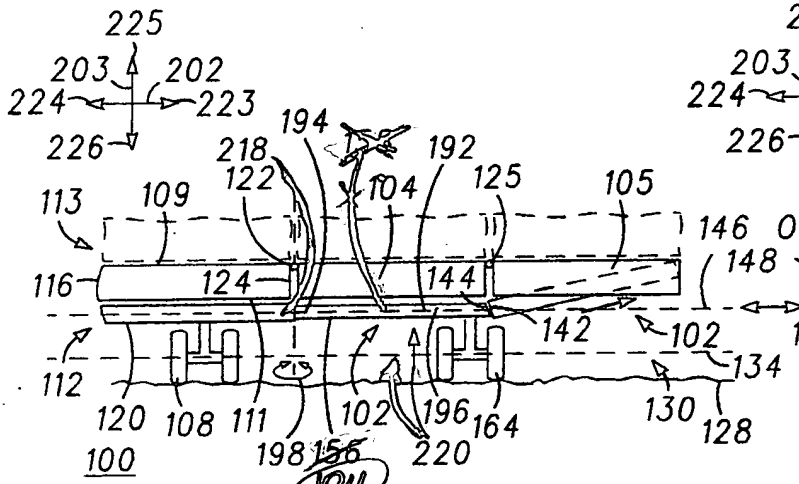

FIG.32

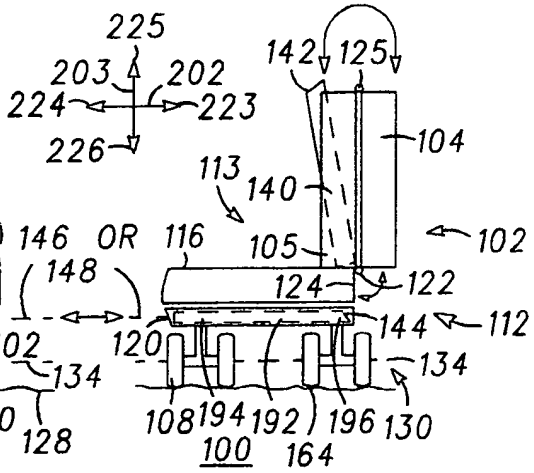

FIG.33

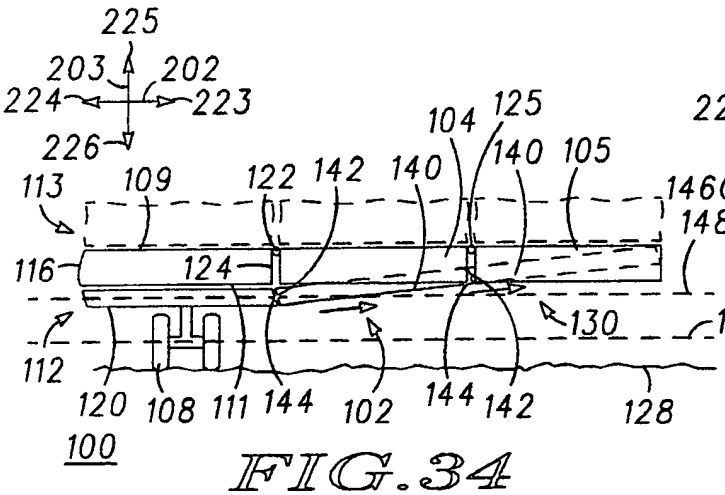

FIG.34

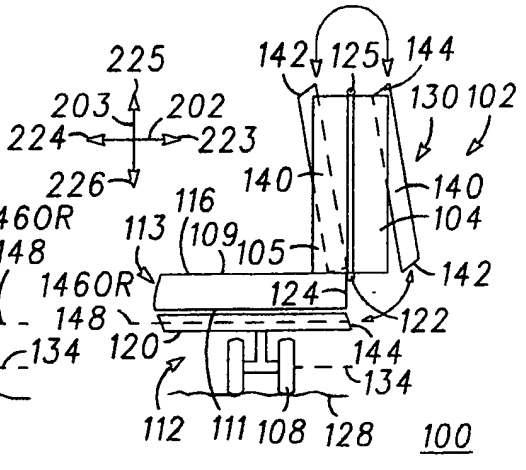

FIG.35

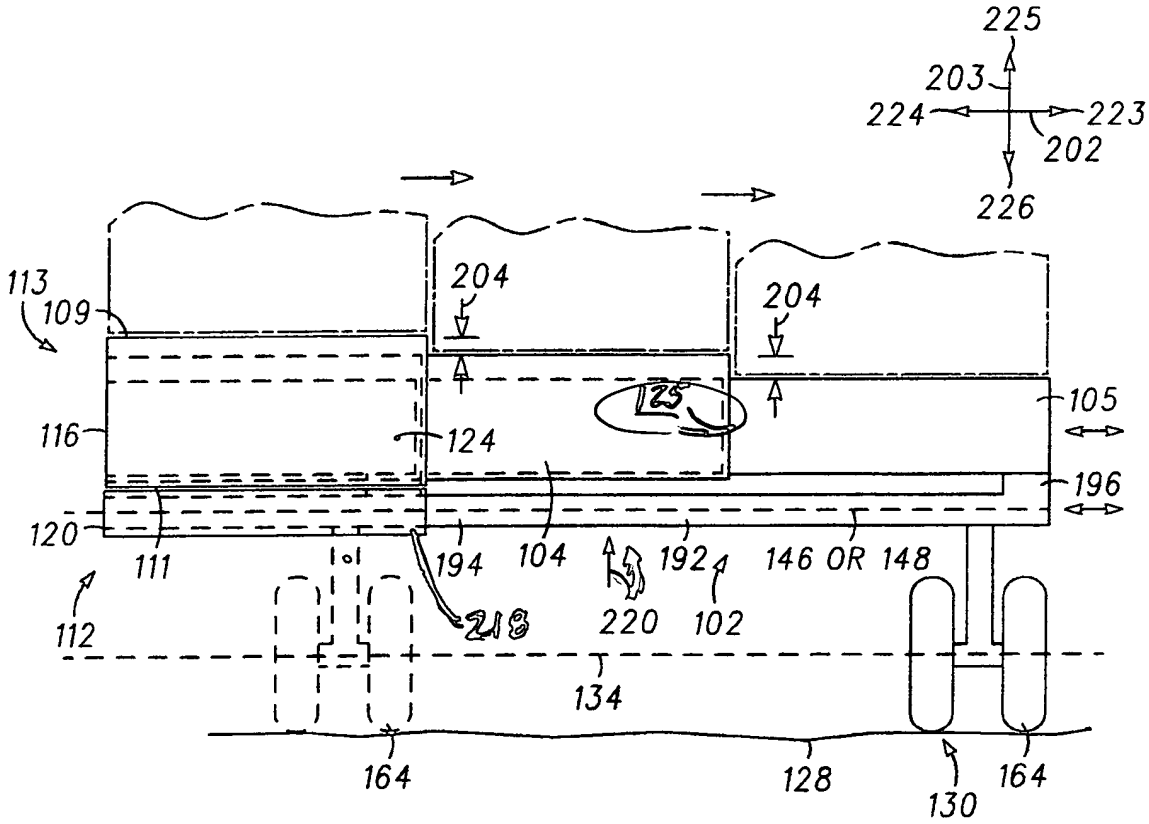
225
203
224
223
202
226
113
109
204
204
105
116
124
123
196
120
111
194
104
192
146 OR 148
112
218
220
102
134
164
128
130
164
100

FIG. 40

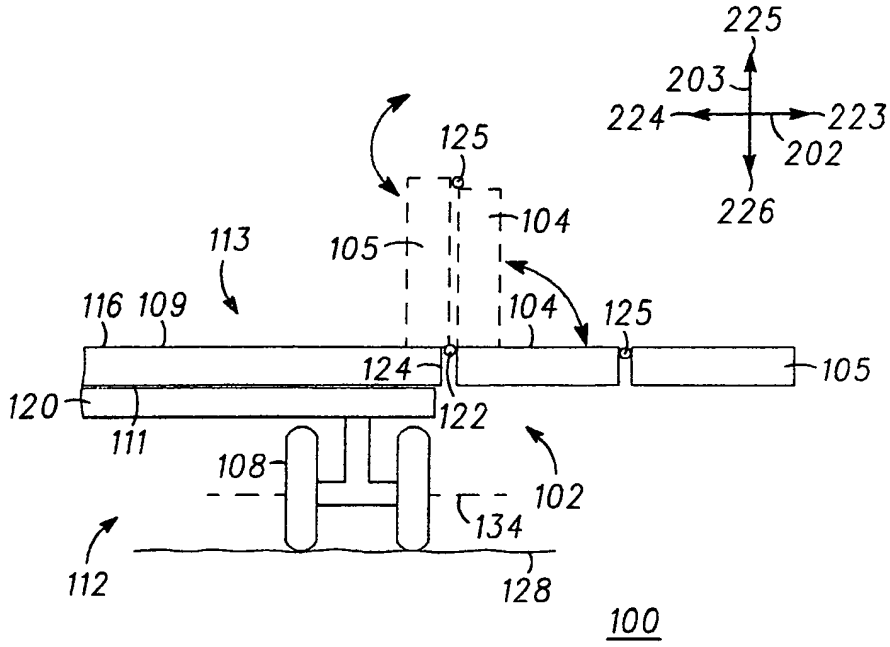
225
203
224
223
202
226
125
104
113
105
116 109
104
125
124
105
120
122
111
108
102
134
112
128
100

FIG.38

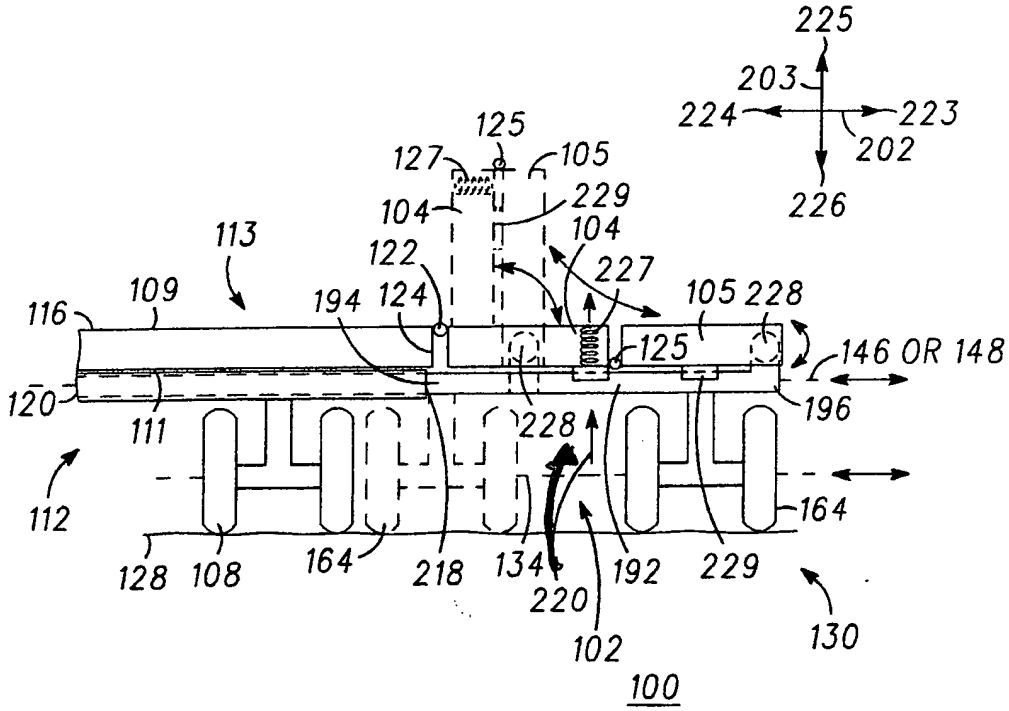
225
203
224
223
202
226
125
127
105
229
104
104
113
122
227
109
194
124
105 228
116
125
146 OR 148
120
111
228
196
112
164
128
108
164
218
134
192
229
220
102
130
100

FIG.39